CLAIMS

What is claimed is:

1. A method for optimizing transmission of radio frequency communication link signals in a radio frequency communications network, said method comprising:

(a) determining a statistical difference between:

a mean radio frequency communication link propagation loss value based on a set of measured radio frequency communication link propagation loss values, and

a radio frequency communication link propagation loss model value;

(b) calculating a signal to noise ratio of a radio frequency communication link signal;

(c) computing a confidence interval based on:

a measured signal to noise threshold ratio of a measured radio frequency communication link signal, and

a standard deviation associated with said calculated signal to noise ratio;

(d) assigning a probability value based on said confidence interval; and

(e) generating a radio frequency communication link packet completion rate performance level based on said probability value.

2. The method of claim 1, wherein said transmission of radio frequency communication link signals occurs in situations in which there is jamming of said frequency communications network.

3. The method of claim 1, wherein said transmission of radio frequency communication link signals occurs in situations in which there is no jamming of said frequency communications network.

4. The method of claim 1, wherein said radio frequency communication link propagation loss model value is based on a Terrain-Integrated Rough-Earth Model.

5. The method of claim 1, wherein said radio frequency communication link performance level comprises a probability of successfully receiving transmissions of digital packets in said radio frequency communications network.

6. The method of claim 5, wherein said probability of successfully receiving transmissions of digital packets in said radio frequency communications network comprises packet completion rate measurements.

7. The method of claim 1, wherein said radio frequency communication link signals are transmitted from a transmitter to a receiver in said radio frequency communications network.

8. The method of claim 7, wherein in said step of calculating a signal to noise ratio, a value of said signal comprises a combination of power of said transmitter, an antenna gain of said transmitter, a cable loss of said transmitter, a propagation loss value from said transmitter to said receiver, an antenna gain of said receiver, and a cable loss of said receiver.

9. The method of claim 7, wherein in said step of calculating a signal to noise ratio, a value of said noise comprises a combination of power of a jamming transmitter, an antenna gain of said jamming transmitter, a cable loss of said jamming transmitter, a propagation loss value from said jamming transmitter to said receiver, an antenna gain of said receiver, a cable loss of said receiver, and a jammer bandwidth correction factor.

10. A system for optimizing transmission of radio frequency communication link signals in a radio frequency communications network comprising:

(a) means for determining a statistical difference between:

a mean radio frequency communication link propagation loss value based on a set of measured radio frequency communication link propagation loss values, and

a radio frequency communication link propagation loss model value;

(b) means for calculating a signal to noise ratio of a radio frequency communication link signal;

(c) means for computing a confidence interval based on:

a measured signal to noise threshold ratio of a measured radio frequency communication link signal, and

a standard deviation associated with said calculated signal to noise ratio;

(d) means for assigning a probability value based on said confidence interval; and

(e) means for generating a radio frequency communication link packet completion rate performance level based on said probability value.

11. The system of claim 10, wherein said transmission of radio frequency communication

link signals occurs in situations in which there is jamming of said frequency communications network.

12. The system of claim 10, wherein said transmission of radio frequency communication link signals occurs in situations in which there is no jamming of said frequency communications network.

13. The system of claim 10, wherein said radio frequency communication link propagation loss model value is based on a Terrain-Integrated Rough-Earth Model.

14. The system of claim 10, wherein said radio frequency communication link performance level comprises a probability of successfully receiving transmissions of digital packets in said radio frequency communications network.

15. The system of claim 14, wherein said probability of successfully receiving transmissions of digital packets in said radio frequency communications network comprises packet completion rate measurements.

16. The system of claim 10, wherein said radio frequency communication link signals are transmitted from a transmitter to a receiver in said radio frequency communications network.

17. The system of claim 16, wherein in said signal to noise ratio, a value of said signal comprises a combination of power of said transmitter, an antenna gain of said transmitter, a

cable loss of said transmitter, a propagation loss value from said transmitter to said receiver, an antenna gain of said receiver, and a cable loss of said receiver.

18. The system of claim 16, wherein in said signal to noise ratio, a value of said noise comprises a combination of power of a jamming transmitter, an antenna gain of said jamming transmitter, a cable loss of said jamming transmitter, a propagation loss value from said jamming transmitter to said receiver, an antenna gain of said receiver, a cable loss of said receiver, and a jammer bandwidth correction factor.

19. A program storage device readable by machine, tangibly embodying a program of instructions executable by said machine to perform a method for optimizing transmission of radio frequency communication link signals in a radio frequency communications network, said method comprising:

(a) determining a statistical difference between:

a mean radio frequency communication link propagation loss value based on a set of measured radio frequency communication link propagation loss values, and

a radio frequency communication link propagation loss model value;

(b) calculating a signal to noise ratio of a radio frequency communication link signal;

(c) computing a confidence interval based on:

a measured signal to noise threshold ratio of a measured radio frequency communication link signal, and

a standard deviation associated with said calculated signal to noise ratio;

(d) assigning a probability value based on said confidence interval; and

(e) generating a radio frequency communication link packet completion rate performance level based on said probability value.

20. The program storage device of claim 19, wherein said transmission of radio frequency communication link signals occurs in situations in which there is jamming of said frequency communications network.

21. The program storage device of claim 19, wherein said transmission of radio frequency communication link signals occurs in situations in which there is no jamming of said frequency communications network.

22. The program storage device of claim 19, wherein said radio frequency communication link propagation loss model value is based on a Terrain-Integrated Rough-Earth Model.

23. The program storage device of claim 19, wherein said radio frequency communication link performance level comprises a probability of successfully receiving transmissions of digital packets in said radio frequency communications network.

24. The program storage device of claim 23, wherein said probability of successfully receiving transmissions of digital packets in said radio frequency communications network comprises packet completion rate measurements.

25. The program storage device of claim 19, wherein said radio frequency communication link signals are transmitted from a transmitter to a receiver in said radio frequency communications network.

26. The program storage device of claim 25, wherein in said step of calculating a signal to noise ratio, a value of said signal comprises a combination of power of said transmitter, an antenna gain of said transmitter, a cable loss of said transmitter, a propagation loss value from said transmitter to said receiver, an antenna gain of said receiver, and a cable loss of said receiver.

27. The program storage device of claim 25, wherein in said step of calculating a signal to noise ratio, a value of said noise comprises a combination of power of a jamming transmitter, an antenna gain of said jamming transmitter, a cable loss of said jamming transmitter, a propagation loss value from said jamming transmitter to said receiver, an antenna gain of said receiver, a cable loss of said receiver, and a jammer bandwidth correction factor.